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Before the  
FEDERAL COMMUNICATIONS COMMISSION  
Washington, D.C. 20554

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In the Matter of )  
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Amendment of the Commission's Rules with )  
Regard to the 3650-3700 MHz Government )  
Transfer Band )  
)

ET Docket No. 98-237

COMMENTS OF NORTHERN TELECOM INC.

William F. Maher, Jr.  
Halprin, Temple, Goodman & Maher  
555 12<sup>th</sup> Street, N.W.  
Suite 950 North  
Washington, D.C. 20004  
(202) 371-9100

Counsel for Northern Telecom Inc.

Of Counsel:

John G. Lamb, Jr.  
Northern Telecom Inc.  
2100 Lakeside Boulevard  
Richardson, Texas 75081-1599

Dated: February 16, 1999

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## TABLE OF CONTENTS

	<u>Page</u>
<b>SUMMARY</b> .....	ii
<b>I. INTRODUCTION</b> .....	1
<b>II. SPECIFIC COMMENTS</b> .....	3
<b>III. CONCLUSION</b> .....	15

## SUMMARY

Nortel Networks is keenly interested in wireless telecommunications solutions, including Fixed Wireless Access ("FWA") applications, Broadband Wireless Access ("BWA") applications, digital cellular, and PCS, as well as the spectrum allocations necessary to support these solutions. Nortel Networks applauds the Commission on the thorough job it has done in preparing this Notice.

Nortel Networks urges the Commission to consider the 3650-3700 MHz spectrum segment in the context of the larger 3400-3700 MHz band, of which it is an important part. The rules established in this proceeding for the 3650-3700 MHz segment should not compromise its eventual inclusion within the larger band, all of which is designated for fixed services by ITU agreement. International harmonization of the entire 3400-3700 MHz band, including the use of 25 MHz (paired) blocks, should be an important long-term goal of the Commission.

Nortel Networks believes that the 3600-3625 MHz and 3625-3650 MHz segments could be made available for commercial use, including the FWA application, if certain conditions were met. Preliminary results of studies by the Department of Defense/Joint Spectrum Center indicate that Government sharing of the 3400-3700 MHz band with the FWA application is practical. That possible future use should be considered when determining allocation rules for the 3650-3700 MHz band.

Thus, when determining allocation rules for the 3650-3700 MHz band, the Commission should anticipate the future commercial use of the entire 3400-3700 MHz band. The rules implemented in this proceeding should not preclude an orderly transition

over time from this band's current use for Government radiolocation service to non-Government fixed and fixed-satellite service, in accordance with international harmonization objectives, while recognizing the special needs of Government radiolocation service in the United States.

An FWA allocation in the 3400-3700 MHz band would be an effective way for delivering advanced telecommunications services to residential and small business users, consistent with section 706 of the Communications Act. To this end, Nortel Networks presents a practical and desirable sub-banding arrangement for the 3400-3700 MHz band and a sequencing regime for licensing the frequencies at issue. These comments also discuss antenna height and transmit power parameters.

Nortel Networks addresses several other topics in these comments, including the co-existence of FWA applications with various types of government radar and equipment used for the fixed-satellite service. Nortel Networks opposes the use of these frequencies for commercial radar.

Nortel Networks urges the Commission not to mandate intrusive standards for receivers or other equipment using these frequencies, but recognizes that the Commission may need to specify out-of-band receiver susceptibility to avoid some difficulties.

Before the  
**FEDERAL COMMUNICATIONS COMMISSION**  
Washington, D.C. 20554

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ET Docket No. 98-237

COMMENTS OF NORTHERN TELECOM INC.

Northern Telecom Inc. ("Nortel Networks") hereby responds to issues raised in the above-captioned Notice of Proposed Rulemaking and Order ("Notice") proposing to allocate the 3650-3700 MHz spectrum segment to non-Government fixed services on a primary basis.<sup>1</sup>

I. INTRODUCTION

Nortel Networks is the leading global supplier, in more than 100 countries, of digital telecommunications and data systems to businesses, universities, local, state and federal governments, the telecommunications industry, and other institutions. The company employs more than 30,000 people in the United States in manufacturing plants, research and development centers, and in marketing, sales and service offices nationwide.

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<sup>1</sup> See ET Docket No. 98-237, Notice of Proposed Rulemaking and Order, FCC 98-337 (rel. Dec. 18, 1998).

Nortel Networks is heavily involved in the development of wireless solutions to meet present and future mobile and fixed communications needs using a full range of technologies and standards, such as TDMA, CDMA, GSM, Fixed Wireless Access (“FWA”), Broadband Wireless Access (“BWA”), and DECT. Nortel Network's Wireless Solutions division is one of three major network businesses based in Richardson, Texas, where Nortel Networks employs more than 8,000 people. Nearly 3,800 of those employees are in Wireless Solutions, which addresses global growth markets for digital cellular, PCS, FWA applications, and BWA applications.

Nortel Networks applauds the Commission on the thorough job it has done in preparing this Notice. Because spectrum allocation is a complex process, the background and preparatory information in the Notice are essential to a productive dialogue and ultimate resolution of the allocations at issue.

Nortel Networks urges the Commission to consider the 3650-3700 MHz spectrum segment in the context of the larger 3400-3700 MHz band of which it is an important part. The rules established in this proceeding for the 3650-3700 MHz segment should not compromise its eventual inclusion within the larger band, all of which is designated for fixed services by International Telecommunication Union (“ITU”) agreement. International harmonization of the entire 3400-3700 MHz band, including the use of 25 MHz (paired) blocks, should be an important long-term goal of the Commission. The Commission’s rules for the 3650-3700 MHz segment should reflect this important harmonization goal.

## II. SPECIFIC COMMENTS

Nortel Networks offers the following specific comments on the Notice.

### **Paragraph 3: Spectrum Allocation History**

An important result of the history of spectrum allocation of these frequencies is that the radiolocation service no longer has primary status in Regions 2 and 3. In discussing the historical allocation of this spectrum, the Notice refers to the international allocation of the 3500-3700 MHz band.<sup>2</sup> We point out that this ITU allocation for fixed and fixed satellite services actually starts at 3400 MHz and extends to 4200 MHz in Regions 1, 2 and 3. This is important because the lower band of 3400-3500 MHz is already in use in other countries for FWA applications and should eventually be so used in the United States as well.

The Notice, at footnote 10, acknowledges that the 1979 World Administrative Radio Conference stated that the allocation of 3400-3700 MHz in Regions 2 and 3 to radiolocation service was on a primary basis, and urged all administrations to cease such operations by 1985.<sup>3</sup> However, further history clarifies the current status of radiolocation service. In 1988, the IFRB (now RRB) in Circular Letter 747 (“CL 747”), placed fixed service on an equal basis with radiolocation service in all three regions.<sup>4</sup> While the radiolocation service is never named a secondary service, a careful reading of CL 747 shows that the radiolocation service is no longer a primary service in Regions 2 and 3.

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<sup>2</sup> See Notice n. 9.

<sup>3</sup> See *id.* n. 10.

<sup>4</sup> See IFRB, Circular Letter 747, Provision 784 (July 1988). A copy to this letter is included as Attachment A to these comments.

Allocation of the entire 3600-3700 MHz band to commercial service has been seriously considered in the United States in recent years and should not be disregarded in this proceeding. The NTIA Spectrum Allocation Final Report, issued in February 1995 in response to the Omnibus Budget Reconciliation Act of 1993, identifies the considerations for commercial use of the entire 3600-3700 MHz band.<sup>5</sup> Also, NTIA's Land Mobile Spectrum Planning Options report notes the Commission's recommendation that the 3625-3700 MHz segment be paired with the 5850-5925 MHz segment.<sup>6</sup> Nortel Networks believes that the 3600-3625 MHz and 3625-3650 MHz segments could be made available for commercial use if certain conditions were met. Preliminary results of studies by the Department of Defense/Joint Spectrum Center ("JSC") indicate that sharing of the 3400-3700 MHz band with the FWA application is practical and that possible future use should be considered when determining allocation rules for the 3650-3700 MHz band.<sup>7</sup>

As a result, when determining allocation rules for the 3650-3700 MHz band, the Commission should anticipate the future commercial use of the entire 3400-3700 MHz band. The rules implemented in this proceeding should not preclude an orderly transition over time of this band's current use for Government radiolocation service to non-Government fixed and fixed-satellite service, in accordance with international harmonization objectives while recognizing the special needs of Government radiolocation service in the United States.

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<sup>5</sup> See NTIA Special Publication 95-32 (Feb. 1995) at 2-36 to 2-38.

<sup>6</sup> See NTIA Special Publication 95-34 (Oct. 19, 1995) at 3-11.

<sup>7</sup> See *Fixed Wireless Access*, Petition for Rulemaking of Mountain Telecommunications, Inc. and Saddleback Communications Company (filed Sept. 30, 1998) ("MTI petition") at i.



The table below summarizes the method of allocating 25MHz sub-bands (“Blocks”) in the 3400 MHz-3700MHz band now being adopted in various forms in many countries, especially other CITEL<sup>8</sup> and NAFTA<sup>9</sup> members:

BLOCK A	3400 – 3425 MHz
BLOCK B	3425 – 3450 MHz
BLOCK C	3450 – 3475 MHz
BLOCK D	3475 – 3500 MHz
BLOCK E	3500 – 3525 MHz
BLOCK F	3525 – 3550 MHz
BLOCK G	3550 – 3575 MHz
BLOCK H	3575 – 3600 MHz
BLOCK J	3600 – 3625 MHz
BLOCK K	3625 – 3650 MHz
BLOCK L	3650 – 3675 MHz
BLOCK M	3675 – 3700 MHz

#### **Paragraph 4: Co-Existence with Radar**

Operating experience with Nortel’s FWA systems has shown that Air Force use of the spectrum below 3650-3700 MHz has had no apparent operational impact on FWA systems operating in that band. The view held in 1995 that the radar equipment operating in the 3650-3700 MHz band should have a radius of operation of 80 kilometers (50 miles) for the three shorebased locations is being confirmed in a study now being performed by the JSC for FWA applications. Preliminary results from that study suggest that a 50 MHz guardband to provide separation from the AN/SPY-1 (AEGIS) system is not necessary. Similarly, Nortel Networks anticipates that the JSC study will identify the separation needed from the AN/SPN-43 system, which also operates in this band. The JSC is

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<sup>8</sup> CITEL: Organization of American States (OAS) Consultative Committee on Telecommunications.

expected to identify potential interference mechanisms and mitigation measures that would facilitate sharing between government radar systems and FWA applications without impacting DOD operations.

**Paragraph 6, Footnote 19: Interference with FSS**

NTIA's findings of 1994 are correct concerning Air Force radars causing interference with the FSS C-band equipment that NTIA examined.<sup>10</sup> However, the practical effect of these findings should be limited to older technologies, since they probably do not apply to more current digital technology designs. The designs of the FWA systems currently operating in the 3400-3700 MHz band are radically different from those used by the FSS. Studies are well advanced in ITU-R WP 4-9S to determine the criteria for sharing in these frequencies between the fixed service, including FWA applications, and the fixed satellite service.

**Paragraph 6, Footnote 23: Section 706 Advanced Services Deployment**

Nortel Networks supports the Commission's objective of using the 3650-3700 MHz segment to advance the objectives of Section 706 of the Communications Act of providing broadband access to the Internet. In commenting in the Commission's Section 706 inquiry, Nortel Networks pointed out that while allocations at 18/24 GHz (DEMS), 28 GHz (LMDS) and 38 GHz have been opened to FWA and BWA applications, these offerings are limited to medium and large business applications. This limitation exists

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<sup>9</sup> NAFTA: North American Free Trade Agreement.

<sup>10</sup> See NTIA Report 94-313 (July 1994).

because of the propagation characteristics and “line-of-sight” engineering required at the very high frequencies involved. An FWA allocation in the 3400–3700 MHz band would be more effective for delivering advanced telecommunications services to residential and small business users, consistent with section 706. Nortel also pointed out in its comments that second and third generation mobile technologies will not match the reasonable costs, increasing speeds, or traditional reliability of wireline and optimized FWA technologies for higher speed/bandwidth data ultimately desired by consumers.

The Rural Telecommunications Group (“RTG”), in an *ex parte* filing in CC Docket No. 98-147, also concludes that wireless technologies will be more cost effective than wireline in deploying advanced services to rural areas. RTG points out that unfortunately many rural telephone companies have not been able to secure spectrum to provide wireless services, since “contrary to popular perception, spectrum in rural areas is often expensive to obtain.”<sup>11</sup>

Through wise allocation of the 3400–3700 MHz band, the Commission has an opportunity both to advance the deployment of advanced services and address the universal service needs of consumers such as those in rural and underserved areas. Operators in unserved and underserved areas should have easier access to spectrum for FWA applications. Such considerations are already reflected in the licensing rules for the Basic Exchange Telephone Radio Service (“BETRS”).

Evidence of the need for improvement in the deployment of even basic telecommunications capability is readily available. The Commission has begun

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<sup>11</sup> Rural Telecommunications Group, *ex parte* filing in CC Docket No. 98-147 (Nov. 20, 1998) at 2.

addressing the situation of Native Americans on reservations.<sup>12</sup> The initial hearings, on January 29, 1999 in Albuquerque, New Mexico, confirmed the difficulty that many residents of reservations face in obtaining service.<sup>13</sup> Common complaints include a long waiting time, of months to years, to get service, not only for residents but also for fire and police departments. Another difficulty on the reservations is the high cost of obtaining and retaining service. In some cases, service providers charge thousands of dollars to extend facilities for conventional services.

FWA is a viable solution to many of these situations, as evidenced by the success that Mountain Telecommunications, Inc. and Saddleback Communications Company are having in providing service to the Salt River Pima-Maricopa Indian Community using a Nortel Networks FWA system operating at 3.5 GHz under a experimental license. This success has prompted these firms to request a permanent license to service the Indian and nearby communities.<sup>14</sup> GTE is addressing a similar situation in Sonora, Texas where BETRS is not providing adequate service to consumers. GTE has an application pending before the Commission for an FWA experimental license for Sonora at 3.5 GHz.<sup>15</sup>

#### **Paragraph 7: Clarification of “Heavily Used”**

Nortel Networks believes that paragraph 7 of the Notice inaccurately describes the 3400-3600 MHz frequencies as being “heavily used” by the military. Based on this description, one would incorrectly expect to find military radars in constant operation at

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<sup>12</sup> See BO Docket No. 99-11, Public Notice DA 99-201 (Corrected Jan. 21, 1999).

<sup>13</sup> See FCC website, *Overcoming Obstacles to Telephone Service to Indians on Reservations*, <[http://www.fcc.gov/Panel\\_Discussions/Teleservice\\_reservations/](http://www.fcc.gov/Panel_Discussions/Teleservice_reservations/)>

<sup>14</sup> See MTI petition, *supra* note 7.

these frequencies in all parts of the United States and its possessions. The very nature of the radiolocation service is such that equipment installations operating in these bands are neither numerous nor extensively deployed. The reality is that use of radiolocation equipment is localized in a few well-known geographic areas in addition to airborne and offshore (shipborne) platforms.

#### **Paragraph 7, Footnote 24: Fixed Wireless Access Service (FWA)**

In footnote 24 of the Notice, FWA is defined as a service. FWA is not a service but an application of the fixed service, used to provide basic exchange service, advanced telecommunications services, and other services to customers.

Use of the FWA application is growing rapidly in other countries. The Canadian government has adopted an FWA licensing policy<sup>15</sup> that allows for its commercial operation and has issued market development licenses for Nortel Networks' Proximity I system. Commercial deployment of the Proximity I system can be found in the United Kingdom, Mexico, Australia, Sri Lanka, and several other countries.

#### **Paragraph 9: Spectrum Band Plan**

It is very important in licensing the 3650-3700 MHz segment that the Commission harmonize its rules with those of the international community. The case for international harmonization is compelling, as Nortel Networks noted in its comments in

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<sup>15</sup> See GTE application for FWA experimental license in Sonora, Texas. OET File No. 6210-EX-PL-1998.

<sup>16</sup> See *Spectrum Policy and Licensing Provisions for Fixed Wireless Access Systems in Rural Areas in the Frequency Range 3400-3700 MHz*, SP3400-3700 (July 1998), Industry Canada website <<http://strategis.ic.gc.ca/SSG/sf01621e.html>>

the Section 706 inquiry.<sup>17</sup> Such harmonization can facilitate greater market expansion, faster product deployment, and better use of scarce R&D resources. Doing so will also facilitate cross-border coordination with Mexico and Canada, other NAFTA countries that already have their band plans in place for this spectrum and are now developing FWA applications on a commercial basis.<sup>18</sup>

While the amount of spectrum being considered for allocation in this proceeding is relatively small (50 MHz) the Commission should examine sub-banding models in use or under consideration by other administrations, the ITU-R, and CITEL PCC-III. These schemes are based on the use of 25 MHz (paired) blocks, without specifying the implementing technology. It would be useful for the Commission to follow these examples, particularly because North American and international equipment manufacturers are delivering Frequency Division Duplex (“FDD”) and Time Division Duplex (“TDD”) systems in accordance with this sub-banding scheme. Referring to the table of 25MHz Blocks above in our comments on Paragraph 3, a generic licensing model could use the following sequence for normal licensing applications in order to optimize the efficient use of the spectrum, while minimizing the restriction of operator and vendor technology choices.

*FDD:* If FDD techniques are used, frequency blocks should be licensed in pairs according to the following:

- i) For systems with 50 MHz duplex separation, block pair B-D is preferred, then F-H, then K-M, then A-C, E-G and J-L

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<sup>17</sup> Nortel Networks comments in CC Docket No. 98-146 at 9.

<sup>18</sup> Attachments B and C to these comments summarize the experience of the governments of Canada and Mexico, respectively, regarding FWA applications.

ii) For systems with 100 MHz duplex separation, block pair A-E is preferred, then C-G, then D-H, then B-F

iii) The upper block of each pair is to be used for base station transmit.

*TDD:* If time division duplexing (TDD) techniques are used, Block L (or L+M) is preferred, then J (or J+K), then H (or H+G), then F (or F+G), then G.

In general, operators must observe block edge and out-of-block emissions and susceptibility limitations to avoid interference with adjacent blocks. Where an operator has licensed contiguous blocks then it need not observe the limits for the block edges within its assignment. Further, a 25 MHz block may be shared among operators provided that the technology used is compatible by mutual agreement between the operators. Use of the 3400-3700 MHz band in border areas is normally subject to the provisions of appropriate cross-border coordination agreements.

In countries where FWA equipment operating in the 3400-3700 MHz band is currently being deployed, both operators and vendors have promoted the foregoing arrangements as being practical and desirable.

#### **Paragraph 11: Co-existence With Mobile Government Radars**

Co-existence with current users of the spectrum adjacent to the 3650-3700 MHz segment is being addressed in ITU-R JRG 8A-9B through a proposed ITU-R Recommendation from the United States. This Recommendation provides a methodology for studies to determine what mitigation measures, if any, an FWA technology needs to employ in the United States. It is expected that this recommendation will be finalized during 1999.

### **Paragraph 12, Footnote 34: Antenna Height and Transmit Power**

Following are typical parameters being recommended to various administrations by vendor/operator advisory bodies for inclusion in soon-to-be released standards documents.

### **Maximum Equivalent Isotropically Radiated Power**

Hub and subscriber/remote station transmissions should not exceed 32 dBW equivalent isotropically radiated power (“EIRP”) per RF channel. However, a higher EIRP may be permitted if technical justification is provided. Tower height (height above average terrain or “HAAT”) for hub stations would not normally exceed 250m, but can do so if technically justified for a specific application. Antenna height for subscriber or remote stations is normally less than 15m above average terrain, but might need to be higher in specific situations, such as to clear local clutter, foliage, or other obstacles.

### **Out-of-Block Emission Limits**

At the edge of any 25 MHz block, the following limits would apply:

- i) In any 30 kHz bandwidth, unwanted emission spectral density relative to the inband spectral density shall be attenuated by at least:
  - a) 10 dB at the bandedge;
  - b) 25 dB at 200-400 kHz offset from the bandedge;
  - c) 25 dB at 400 kHz to 50 dB at 3.0 MHz offset, linearly interpolated;
  - d) 50 dB beyond 3 MHz offset, or see (ii), whichever is more stringent.
- ii) In any 1.0 MHz band which is removed from the assigned frequency by more than  $\pm 250\%$  of the necessary bandwidth: At least  $43 + 10\log_{10}(P_{\text{mean}})$



dB, or 80 dB, whichever is less stringent.  $P_{\text{mean}}$  is the mean output power of the transmitter in watts.

#### **Paragraph 15: Radar Operation**

With regard to the use of commercial radars in this band, we encourage the Commission to align U.S. policy with the ITU Radio Regulations, which do not allow for such use. Since radiolocation (Government and non-Government) in all regions was to have been out of this band by 1985, United States practice is tardy in this regard.<sup>19</sup>

#### **Paragraph 16: Coordination with Government Naval Operations**

We also urge the Commission to consider the results of the JSC study when determining the U.S. coastal distance limits within which radars on naval vessels shall not transmit. We understand from the JSC that it is normal practice for naval helicopters to operate while naval vessels are entering and leaving harbor, during which time the vessels' air traffic control radar (e.g. AN/SPN-43) must be operating. This practice substantially complicates the spectrum licensing and potential auction processes.

#### **Paragraph 18: Receiver Standards**

Nortel Network agrees with the Notice that the Commission should not mandate receiver or other equipment standards for this band. However, the Commission may need to specify out-of-band receiver susceptibility to avoid difficulties similar to those that

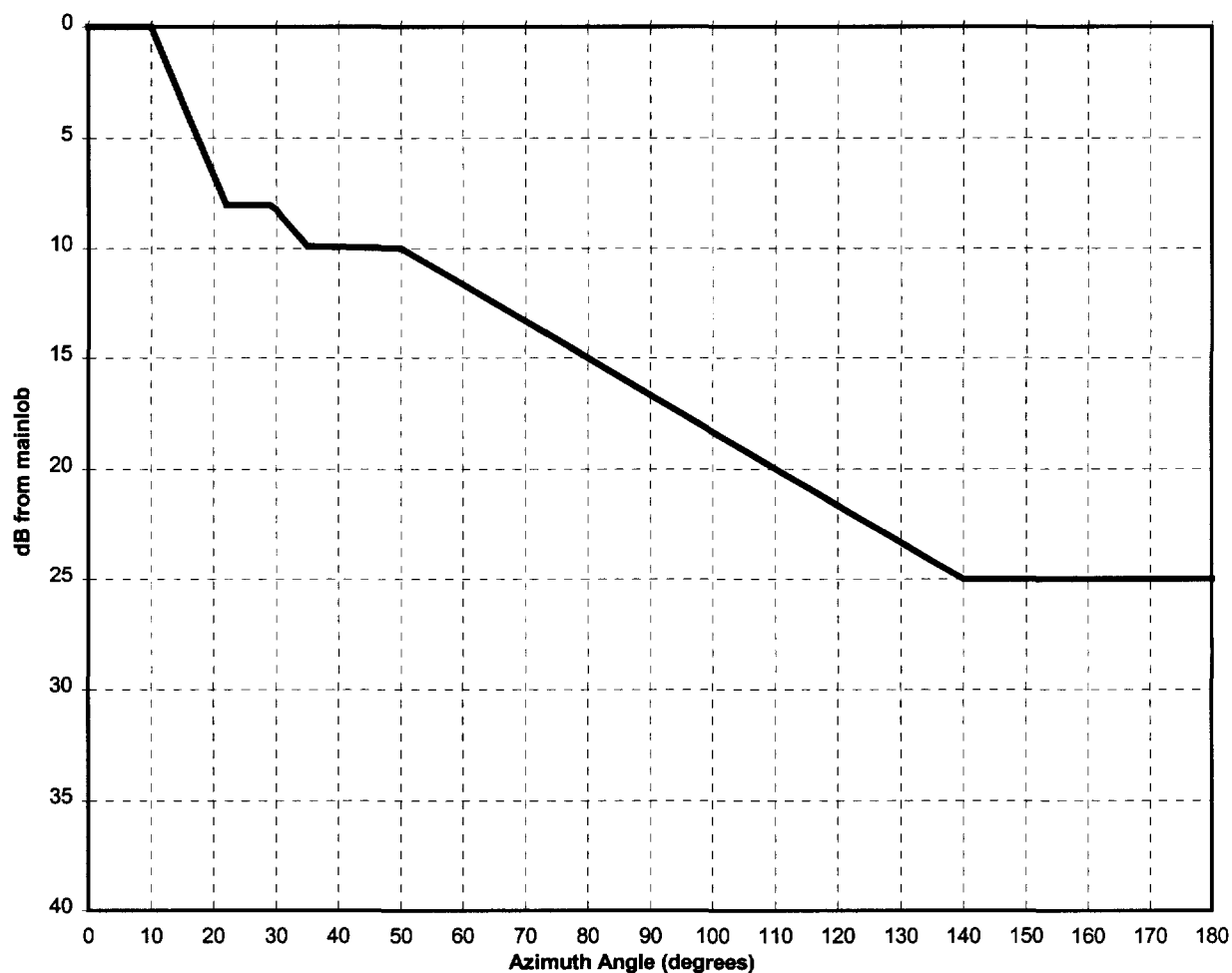
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<sup>19</sup> See ITU Radio Regulations at footnote 784. All administrations in Regions 1, 2, and 3 have complied except the United States.

NTIA has discussed.<sup>20</sup> By refraining from intrusive requirements, the Commission will harmonize U.S. usage with other administrations and regions. By avoiding whenever possible the adoption of mandatory receiver standards, the Commission will allow operators to purchase equipment that is already readily available in the market place, rather than potentially more expensive equipment designed only for the U.S. market. For FWA systems operated in the United States and its possessions, the analysis methods developed by the JSC should suffice to protect both the FWA operator and the radiolocation service. Following is a suggested envelope pattern for the subscriber / remote antenna in the horizontal plane for both the E and H fields with vertical or horizontal polarization:

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<sup>20</sup> See NTIA Report 94-313, *supra* note 10.

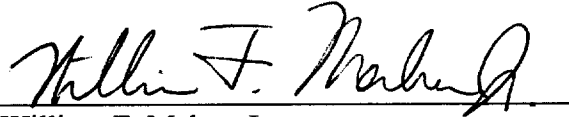


### III. CONCLUSION

Nortel Networks supports the Commission's goal of using the 3650-3700 MHz frequencies for innovative applications such as FWA. Nortel Networks urges the Commission to consider allocation of this segment in the broader context of the 3400-3700 MHz band. The Commission's actions in this proceeding should advance

international harmonization goals, as well as the advanced services deployment and universal service goals of the Communications Act.

Respectfully Submitted,

A handwritten signature in black ink, appearing to read "William F. Maher, Jr.", written over a horizontal line.

William F. Maher, Jr.  
Halprin, Temple, Goodman & Maher  
555 12<sup>th</sup> Street, N.W.  
Suite 950 North  
Washington, D.C. 20004  
(202) 371-9100

Counsel for Northern Telecom Inc.

Of Counsel:

John G. Lamb, Jr.  
Northern Telecom Inc.  
2100 Lakeside Boulevard  
Richardson, Texas 75081-1599

Dated: February 16, 1999

**ATTACHMENT A**

IFRB Circular Letter No. 747



INTERNATIONAL  
FREQUENCY REGISTRATION BOARD  
I.F.R.B.

National: 0221 99 51 11  
International: +41 22 99 51 11

Tg: IFRBCOM GENEVE  
Tél: 421 000 UIT CH

TELEFAX (groupe 2/3)  
+41 22 33 72 56

Genève, le  
Place des Nations

5 July 1988

IFRB Circular-letter No. 747

Subject: IFRB Rules of Procedure: Interpretation of the provisions of  
the Radio Regulations

References: IFRB Circular-letters No. 737 of 11 May 1988 and No. 745  
of 15 June 1988

To the Director-General

Dear Sir,

Further to the above-mentioned Circular-letters, I am communicating to you, in the Annex, the Board's interpretation of the provisions of the part of Article 8 of the Radio Regulations containing the Table of Frequency Allocations and its footnotes, so far as they relate to the space radiocommunication services, as well as those of Articles 13 and 14. An updated Table of Contents is also enclosed.

Yours faithfully,

  
Y. Kurihara  
Chairman

Annex

Part	Contents	Page	Rev.
R		1	2

IFRB TECHNICAL STANDARDS AND RULES  
OF PROCEDURE

PART R

INTERPRETATIONS BY THE BOARD OF SPECIFIC PROVISIONS  
OF THE RADIO REGULATIONS, REGIONAL AGREEMENTS,  
RESOLUTIONS AND RECOMMENDATIONS

CONTENTS

INTRODUCTION

<u>TABLE AR1:</u>	ARTICLE 1 OF THE RADIO REGULATIONS
<u>TABLE AR2:</u>	ARTICLE 2 OF THE RADIO REGULATIONS
<u>TABLE AR5:</u>	ARTICLE 5 OF THE RADIO REGULATIONS
<u>TABLE AR6:</u>	ARTICLE 6 OF THE RADIO REGULATIONS
<u>TABLE AR7:</u>	ARTICLE 7 OF THE RADIO REGULATIONS
<u>TABLE AR8:</u>	ARTICLE 8 OF THE RADIO REGULATIONS
<u>TABLE AR11:</u>	ARTICLE 11 OF THE RADIO REGULATIONS
<u>TABLE AR12:</u>	ARTICLE 12 OF THE RADIO REGULATIONS
<u>TABLE AR13:</u>	ARTICLE 13 OF THE RADIO REGULATIONS
<u>TABLE AR14:</u>	ARTICLE 14 OF THE RADIO REGULATIONS

Prov.	IFRB comments	Rel. Prov.	Rel. Rule
778	There is no allocation to radio astronomy in the bands 3 260 - 3 267 MHz, 3 332 - 3 339 MHz and 3 345.8 - 3 352.5 MHz. The comments under RR718 apply.		
782	<p>1) For the use of ground-based radars, see comments under RR440.</p> <p>2) In respect to the relationships between the radiolocation service and the fixed and fixed-satellite services, see comments under RR784.</p>		
784	<p>The Board was requested by an administration to give the official interpretation of this provision and adopted the following:</p> <p>1) In this respect, the Board reviewed the documents of WARC-79 and noted that</p> <p>a) before WARC-79, the band 3 400 - 3 600 MHz was allocated to the radiolocation service on a primary basis in Regions 2 and 3 and on a secondary basis in Region 1;</p> <p>b) a group of countries proposed to have the allocation secondary in the three Regions with a view to permitting development of the fixed-satellite service (space-to-Earth) without any constraint with respect to the radiolocation service;</p> <p>c) this provision does not have the usual title of "different category of service"; however, several footnotes do not have such a title.</p>		

Part	Table	Page	Rev.
R	AR8	24	



Prov.	IFRB comments	Rel. Prov.	Rel. Rule
784 cont.	<p>2) This provision specifies the category of allocation of the band 3 400 - 3 600 MHz to the radiolocation service in Regions 2 and 3 with respect to</p> <p>a) the fixed service in the three Regions in the whole band (3 400 - 3 600 MHz);</p> <p>b) the mobile service in Region 1 in the whole band (3 400 - 3 600 MHz);</p> <p>c) the mobile service in Regions 2 and 3 in the band 3 400 - 3 500 MHz;</p> <p>d) the mobile (except aeronautical mobile) service in Regions 2 and 3 in the band 3 500 - 3 600 MHz;</p> <p>e) the amateur service in Regions 2 and 3 in the band 3 400 - 3 500 MHz;</p> <p>f) the fixed-satellite service (space-to-Earth) in the three Regions in the whole band (3 400 - 3 600 MHz).</p> <p>3) It is to be noted that the year 1985 is an important element in this provision, although no precise date is given; the Board is of the view that the appropriate date for the interpretation of this provision should be 31.12.1984.</p> <p>4) The first sentence of this provision specifies that "in Regions 2 and 3, in the band 3 400 - 3 600 MHz, the radiolocation service is allocated on a primary basis", and in the remaining part of this provision, there is no reference to services other than the fixed-satellite service (space-to-Earth). The Board understands from this situation that the status of the radiolocation service <u>vis-à-vis</u> the services other than the fixed-satellite service is defined by the allocations appearing in the frame of the Table together with the above first sentence of RR784; however, without the usual title "different category of service", the first sentence of RR784</p>		

Part	Table	Page	Rev.
R.	AR8	25	

Prov.	IFRB comments	Rel. Prov.	Rel. Rule
784 cont.	<p>4) cont. may be misinterpreted as contradicting the secondary allocation in the frame of the Table. Consequently, the Board is of the opinion that the radiolocation service in the band 3 400 - 3 600 MHz in Regions 2 and 3 is primary, having equal rights with</p> <ul style="list-style-type: none"> <li>- the fixed service in the three Regions in the whole band;</li> <li>- the mobile (except aeronautical mobile) service in Regions 2 and 3 in the band 3 500 - 3 600 MHz.</li> </ul> <p>The following services have to be used with a secondary status (RR420 to RR423) with respect to the radiolocation service in Regions 2 and 3:</p> <ul style="list-style-type: none"> <li>- the mobile service in the band 3 400 - 3 600 MHz in Region 1 and in the band 3 400 - 3 500 MHz in Regions 2 and 3;</li> <li>- the amateur service in Regions 2 and 3 in the band 3 400 - 3 500 MHz.</li> </ul> <p>5) Concerning the category of allocation of the radiolocation service in Regions 2 and 3 with respect to the fixed-satellite service (space-to-Earth) after 31.12.1984, the first sentence of RR784 is to be considered together with the last sentence of the same provision which specifies that "thereafter, administrations shall take all practicable steps to protect the fixed-satellite service and coordination requirements shall not be imposed on the fixed-satellite service". The Board is of the view that the words "to protect" may be interpreted as equivalent to RR421 (i.e. not to cause harmful interference to), which is only a part of the definition of a secondary service. As a consequence of this situation,</p> <ul style="list-style-type: none"> <li>- in its relation with the fixed-satellite service, the radiolocation service has a lower status;</li> </ul>		

Part	Table	Page	Rev.
R	AR8	26	

Prov.	IFRB comments	Rel. Prov.	Rel. Rule
784 cont.	<p>5) cont.</p> <ul style="list-style-type: none"> <li>- the earth stations of the fixed-satellite service are not required to apply the RR1107 coordination procedure with respect to the radiolocation service, and when administrations bring into use a receiving earth station, neighbouring countries shall take all practical steps to protect this station from the transmissions of the radiolocation stations.</li> </ul> <p>6) This provision urged administrations to cease operation of their radiolocation stations by 1985. Where such stations remain in operation after this date, paragraph 5 above is applicable to them.</p> <p>7) In addition to the above, the radiolocation service in Regions 2 and 3 is to be considered primary with respect to the amateur service in the countries listed in RR781.</p> <p>8) One might question the appropriateness of having the allocation indicated as secondary in the frame of the Table with the first sentence of RR784 changing the category of service. The Board understands that the intent was probably to retain the primary status of the radiolocation service up to a given date. Unfortunately, RR784 is worded in a way that does not permit considering 1985 as the date by which the radiolocation service is no longer primary.</p> <p>9) In conclusion, regarding the radiolocation service in the band 3 400 - 3 600 MHz in Regions 2 and 3,</p> <ul style="list-style-type: none"> <li>a) its status is primary with respect to services other than the fixed-satellite service;</li> <li>b) its status was primary without any restriction with respect to the fixed-satellite service before 31.12.1984;</li> <li>c) it has a lower status with respect to the fixed-satellite service as of 01.01.1985;</li> </ul>		

Part	Table	Page	Rev.
R	AR8	27	

Prov.	IFRB comments	Rel. Prov.	Rel. Rule
784 cont.	<p>9) cont.</p> <p>d) in the case of harmful interference being caused to an earth station of the fixed-satellite service, the administration operating a radiolocation station in this band shall take appropriate steps to eliminate that interference;</p> <p>e) administrations are urged to cease operation of their radiolocation stations, irrespective of their date of bringing into use.</p>		
785	The first sentence of this provision is worded differently from that of RR784. The Board considers, however, that they should be understood in the same way, and the comments made under RR784 apply.		
789	See comments under RR440.		
792	This provision is in relation to the band 4 500 - 4 800 MHz, which is within the mandate of ORB-88; it may need to be reviewed in the light of the decision of this Conference.		
797	In its Report to WARC-ORB-85 (see Document No. 4), the Board made the following comments on this provision.		

Part	Table	Page	Rev.
R	AR8	28	

## **Attachment B: Canadian Government Activities Regarding FWA**

Several years ago, Canada recognized the need for FWA systems to provide wireline equivalent service to rural and high cost serving areas. In 1998, Canada changed its allocation table to extend fixed service to include 3400-3500 MHz, thus permitting fixed services with FWA applications in the range 3400-3700 MHz. Also, two developmental licenses were granted to a carrier for a pre-standards commercial deployment of FWA technology.

Also in 1998, Canada released 150 MHz of spectrum (3400-3550 MHz) to be licensed on a first-come-first-served basis for rural FWA applications. Licensees of this spectrum are required to take note of radiolocation services and not impact their operation. The Canadian Department of National Defense has been helpful in providing information on its radiolocation activities to facilitate this coordination. The upper 150 MHz (3550-3700) is being held in reserve pending a review of deployment of the rural FWA systems, and a review of the demand for urban use for local exchange service competition and incumbent overlay relief.

A Canadian Radio System Standard (RSS-192) is being developed and will be used for type certification of FWA equipment. The emission mask chosen for this proposed specification essentially accommodates systems designed to either ETSI CDMA or TDMA standards. This emission mask has been accepted by a current TDD vendor.

Likewise, a Canadian Standard Radio System Plan (SRSP 304.5) is under development which discusses the technical requirements on the deployment of FWA systems, including EIRP limits and out-of-block emission masks. A band plan is laid out

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in 25 MHz blocks for the entire 300 MHz, and preferred block assignments are indicated to optimize the roll-out of 50 and 100 MHz duplex FDD systems and TDD systems, in either the truncated or full 300 MHz band. Both the RSS and SRSP are expected to be published in final form in mid-1999.

At the CITEL PCC III meeting in September 1998 [Lima, Peru], Canada offered to draft a sub-banding proposal on a correspondence basis for the next CITEL meeting in April 1999. ITU-R will be considering similar proposals at its JRG8A/9B meetings in February and April 1999.

### **Attachment C: Mexican Government Activities Regarding FWA**

Beginning in 1996, the Mexican Secretariat of Communication and Transport (“SCT”), and later the Federal Telecommunications Commission (“COFETEL”), began the process of opening the Mexican telecommunications market for competition. In 1996, several competitive operating companies were licensed. In 1997, one of those companies was granted a permit to use the 3400–3700 MHz band for FWA trials in the vicinity of Monterrey. Later in 1997/98, the 3400–3600 MHz band was licensed. The 300-3700 MHz band was reserved for possible future FWA applications.

The trials in Monterrey evaluated two vendor’s technologies. Not only were the normal issues of quality of service and reliability addressed, but the ability of the FWA systems to coexist with the radiolocation service (in this case AWACS) was also evaluated. Monterrey had been selected for the trials during a consultation between the U.S. and Mexican governments, where it was presumed that Monterrey would be exposed to AWACS operations in the southern United States. The trials showed no impact on the FWA systems from the AWACS. The competitive operator that conducted the trial is currently installing the world’s largest FWA system in the 3400–3600 MHz band.

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